AMENDMENTS TO THE CLAIMS

1. (Currently amended) A resonator device configured with an input port at one end and a termination at its other end, and for providing a frequency selective element for an oscillator, the device comprising:

a substrate having a thickness between its two outer planar surfaces; and

a fractional wavelength transmission line on ~~a surface~~ one of the surfaces of the substrate, and formed into ~~one or~~ more than one ~~loops~~ loop thereby providing a spiral shaped looped-stub resonator structure, ~~wherein each edge or side of the one or more loops provides a portion of the fractional wavelength~~ wherein adjacent conductor runs of the more than one loop are a predetermined distance from one another to isolate electrical fields between runs, the predetermined distance equal to or greater than the thickness of the substrate.

2. (Original) The device of claim 1 wherein the termination is one of a capacitor, a short circuit, or an open circuit.

3. (Original) The device of claim 1 wherein the device is a structure having a number of layers, and the transmission line is located in an inner layer of the structure.

4. (Original) The device of claim 3 wherein the inner layer is substantially surrounded by dielectric insulating material layers.

5. (Original) The device of claim 4 wherein electrically conducting material layers connected to ground surround the dielectric insulating material layers.

6. (Original) The device of claim 1 wherein the device is incorporated into a voltage controlled oscillator of a phase locked loop circuit.

7. (Original) The device of claim 1 wherein the looped-stub resonator is a metal pattern formed on the substrate, and changes in oscillation frequency are accomplished by physically changing the metal pattern.

8. (Original) The device of claim 1 wherein the looped-stub resonator is formed on the substrate as a metal pattern that includes a capacitive termination, and changes in oscillation frequency are accomplished by physically changing the capacitive termination.

9. (Currently amended) A phase locked loop module comprising:

a voltage controlled oscillator circuit; and

a fractional wavelength looped-stub resonator located on a substrate having a thickness and operatively coupled to the voltage controlled oscillator circuit and having ~~one or~~ more ~~loops~~than one loop thereby providing a spiral shaped loop, ~~with each edge or side of the one or more loops providing a portion of the fractional wavelength,~~ the resonator for providing a frequency selective element for the voltage controlled oscillator circuit~~.~~;

wherein adjacent conductor runs of the more than one loop are a predetermined distance from one another to isolate electrical fields between runs, the predetermined distance equal to or greater than the thickness of the substrate.

10. (Original) The module of claim 9 wherein the looped-stub resonator has a Q of 100 or greater.

11. (Original) The module of claim 9 wherein the voltage controlled oscillator circuit and the looped-stub resonator are located on a common substrate.

12. (Original) The module of claim 9 wherein the voltage controlled oscillator circuit and the looped-stub resonator are located on different substrates.

13. (Original) The module of claim 9 wherein the module includes a number of layers and the looped-stub resonator is located on a layer that is above a dielectric insulation layer.

14. (Original) The module of claim 13 wherein the dielectric insulation layer is located above an electrically conducting material layer that is connected to ground.

15. (Original) The module of claim 9 wherein the looped-stub resonator is terminated with one of a capacitor, a short circuit, or an open circuit.

16. (Original) The module of claim 9 wherein the looped-stub resonator is a metal pattern on a substrate, and changes in oscillation frequency are accomplished by physically changing the metal pattern.

17. (Original) The module of claim 9 wherein the looped-stub resonator is on a substrate as a metal pattern that includes a capacitive termination, and changes in oscillation frequency are accomplished by physically changing the capacitive termination.

18. (Original) The module of claim 9 wherein the looped-stub resonator has a resonant frequency higher than an output frequency of the module.

19. (Original) The module of claim 18 wherein one or more frequency dividers are used to reduce the resonant frequency to the output frequency.

20. (Original) A phase locked loop module comprising:

a first layer having a voltage controlled oscillator circuit;

a second layer of dielectric insulating material covered with a conducting metal that is connected to a ground plane;

a third layer having a fractional wavelength looped-stub resonator operatively coupled to the voltage controlled oscillator circuit and having one or more loops, with each edge or side of the one or more loops providing a portion of the fractional wavelength, the resonator for providing a frequency selective element for the voltage controlled oscillator circuit; and

a fourth layer of dielectric insulating material covered with a conducting metal that is connected to the ground plane;

wherein the third layer is surrounded by the dielectric insulating material of the second and fourth layers.

21. (Original) The module of claim 20 further comprising:

an additional layer of dielectric insulating material on the conducting metal of the second layer to prevent unintended short-circuiting between the first layer and the second layer.

22. (Original) The module of claim 20 wherein the looped-stub resonator has a resonant frequency higher than an output frequency of the module.

23. (Original) The module of claim 22 wherein one or more frequency dividers are used to reduce the resonant frequency to the output frequency.